Progress Review Meeting Minutes

4:00 PM – 6:00 PM (EDT), Tuesday, September 9, 2014

DOT Contract Number: DTPH56-14-H-00003

Contacts: Yong-Yi Wang (ywang@cres-americas.com) and Ming Liu (mliu@cres-americas.com)

Final, 10/10/2014

1 Contact List and Attendance

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2 List of Key Meeting Discussions

(1) Material Procurement and Specimen Fabrication

(a) 12” OD Pipes

The research team identified the 12" X60 pipes for the full-scale tests. Mamdouh commented that multiple pipe grades are being planned for the project, i.e., X70 for CWP tests, X80 for post-buckling burst tests, and X60 for other full-scale tests. He recommended the project team to consider X70/X80 pipes for the full scale tests instead of X60 pipes, due to the increasing use of X70/X80 pipes in new pipeline projects. Yong-Yi commented that one of the reasons to use the 12” OD X60 pipes is the limitation of the testing machine capacity. Since the tests are to provide a few reference points for the model evaluation, the exact pipe grades used in the tests are not critical and the model will cover a range of pipe grades. Yong-Yi agreed that the research team will further investigate the use of the X70/X80 pipes. Steve suggested the research team to contact ASAP and CRC on selecting X60 vs. X70/X80 pipes for the tests.

(b) 12” OD Welds

1) Mamdouh asked if the weld high-low misalignment would be intentionally made in the transition welds for the 12" full scale bending tests. Yong-Yi said misalignment would not be intentionally made. Mamdouh commented that the weld high-low misalignment could be kept at a reasonable value since the geometrical discontinuities such as the weld misalignment can trigger the wrinkle formation.

2) The project team discussed the candidate welding procedures for the 12” OD X60 transition welds, i.e., the cellulosic electrode vs. the low hydrogen downhill electrode. Mamdouh commented that the low hydrogen electrode should be, in general, a better choice for the project. He said that the cellulosic welds were seldom used for pipes of X65 and above in their projects. Jim commented that in Canada, the cellulosic welds have been used on X70 and X80 pipes with thorough studies sponsored by PRCI.

(2) Small-Scale Tests

For the 24" OD X80 pipes used in the post-buckling burst tests, the seam weld needs to be tested. The CTOD and SENT tests are currently listed as optional tests in the small-scale testing matrix due to the cost considerations. Mamdouh suggested to conduct the SENT tests. Jim commented that it would be difficult to prepare the SENT specimen for the seam due to the curvature in the pipe circumference.

(3) Finite Element Analyses

Mamdouh said that the corrosion defects used in the current finite element studies are uniform corrosion patches. Due to their relatively large sizes, the effect of the patch

defects could be very severe. He suggested to use the small defects such as corrosion pits. Ming explained that the patch sizes used in the studies are in line with the common sizes found in most of the similar studies. The main objective of the current studies is to assist the specimen size design and instrumentation plan. The patch was used to intentionally create the severe conditions to get the upper bound specimen length. The defects to be tested will be determined by additional sensitivity studies and typical field conditions. Ming added that different types (e.g., patch, grove, and pit) and sizes of corrosion defects will be studied in future finite element analyses and the models will cover a range of corrosion defects. Steve said he would provide the research team the typical corrosion defect sizes to assist the further analyzes.

3 Near-term Actions

(1) CRES to provide presentation slides and meeting minutes to the project team.

(2) CRES to submit the contract mod #3 to PHMSA by 09/15/2014.

(3) Steve to provide the typical corrosion defect sizes for the analysis.

(4) CRES to contact ASAP and CRC on using X60 vs. X70/X80 pipes for the tests.

(5) The next review meeting is scheduled on 10/29/2014 (Wednesday) at 4:00 pm (EDT).